

U. S. ARMY AND U. S. AIR FORCE: CAN THEY FIGHT AS A COMBINED ARMS TEAM?

A MONOGRAPH

BY

**Lieutenant Colonel Mark G. Cianciolo
United States Marine Corps**

**School of Advanced Military Studies
United States Army Command and General Staff
College
Fort Leavenworth, Kansas**

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ABSTRACT

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Joint and service component vision statements (*Vision 2010*, *Army Vision 2010*, and the United States Air Force's *Global Engagement, A Vision for the 21st Century Air Force*), address the need for full spectrum dominance on the battlefield of the future. In order to achieve this goal, U. S. military forces must be capable of operating jointly, achieving total integration "...institutionally, organizationally, intellectually, and technically." The need for detailed integration of combat forces, to include both joint and multinational, into a combined arms team is critical to mission success.

One area, that involves "total integration" as a joint force, is the combined arms capability between the Army and Air Force, specifically close air support (CAS). Throughout the evolution of modern warfare, the progress of aviation in a close air support role has been consumed by much consternation and speculation as to the effectiveness of its employment. One issue that constantly surfaces questions the United States Air Force's ability to integrate close air support (CAS) with the United States Army's combat (maneuver) forces. This monograph explores the combined arms relationship (USAF ability to provide CAS to the USA) between the Air Force and the Army, and determines whether a dysfunctional relationship exists, to include systemic causes. Therefore, the research query associated with this monograph begs the question, can the United States Army and the United States Air Force fight as a combined arms team, specifically in terms of close air support.

Techniques employed during the literature review consisted mainly of secondary research – post deployment and exercise after-action reports, periodicals, research papers, published books, joint/service component doctrine/regulations, and training standards. Specific evaluation criteria was based upon multiple sources, to include the elements of operational design, the principles of war, the principles of training, and current Army Training and Readiness Evaluation Program (ARTEP) standards.

The monograph concludes that the United States Army and United States Air Force can fight as a combined arms team provided an integrated training philosophy involving both services is established that focuses upon the implementation of universal standards governing the planning, integration, and execution of close air support.

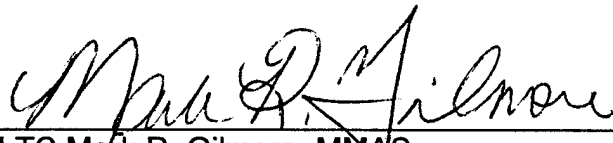
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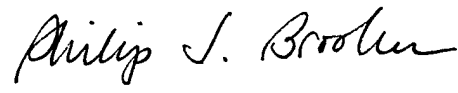
Approved by:



LTC Mark R. Gilmore, MMAS Monograph Director



LTC Robin P. Swan, MMAS Director, School of Advanced
Military Studies



Philip J. Brookes, Ph.D. Director, Graduate Degree
Program

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Chapter I: Introduction

The National Security Act of 1947 established the United States Air Force as a stand-alone branch within the United States Armed Forces.¹ Since that time, a recurring question continues to surface: can the United States Army and the United States Air Force fight as a combined arms team? Joint Vision 2010, to include the nested concepts within *Army Vision 2010*, and the United States Air Force's *Global Engagement, A Vision for the 21st Century Air Force*, addresses the need for full spectrum dominance on the future battlefield. Joint Vision 2010 clearly states that the key to success in future military operations is jointness, that is achieving total integration between U. S. forces while conducting military operations. This requires U. S. forces to be "...fully joint: institutionally, organizationally, intellectually, and technically." In other words, U. S. forces must fight as one – a fully synchronized combined arms team – not only at the joint level, but at the multinational level as well.²

This future battlefield will be an extremely complex and dynamic environment that will range from peacekeeping operations, to major regional conflict, and to operations other than war, all within the confines of one geographic location. It will not be unreasonable for military forces to be engaged in conventional operations, peacekeeping, and humanitarian operations all within the confines of a few city blocks. As such, the need for detailed integration of combat forces, to include both joint and multinational, into a combined arms team is critical to mission success.

In addition to the evolving nature of warfare and its impact on future military operations, the reduction of forces, increases in operations tempo, and dwindling budgets all pose tremendous challenges to the armed forces as we enter the 21st Century,

challenges that may very well threaten each service's objective of achieving the goals outlined in respective vision statements.

During this author's year (Academic Year 97/98) at the United States Army Command and General Staff College it became evident, following several planning exercises and professional discussions, that a potentially dysfunctional relationship exists concerning the United States Air Force's ability to integrate close air support (CAS) with the United States Army's combat (maneuver) forces. This monograph will explore the combined arms relationship (USAF ability to provide CAS to the USA) between the USAF and USA, and determine whether a dysfunctional relationship does in fact exist and, if so, explore the systemic causes of such.

The overarching method of evaluation for this monograph will be to structure the evaluation criteria in an effort to assess the current air/ground capability between the U. S. Army, and the U. S. Air Force. The evaluation criteria will permit the author to identify systemic causes and/or required actions to both strengthen and/or reinforce the Army/Air Force combined arms warfighting capability in future conflict. Research techniques consisted primarily of secondary research, reviewing predeployment training objectives, post deployment and exercise after-action reports, periodicals, research papers, published books, joint/component service doctrine and regulations, and training standards relating to the subject thesis. Specific evaluation criteria was based upon multiple sources, to include the Elements of Operational Design, the Principles of War, the Principles of Training, and current Army Training and Readiness Evaluation Program (ARTEP) standards and Mission Essential Task List (METL) standards, objectives, and criteria.

Chapter II: Evaluation Criteria

The evaluation criteria utilized in conducting the analysis of the close air support relationship between the U. S. Army and U. S. Air Force, to include framing the answer to the thesis question, were based upon multiple sources. These sources include the applicable portions of the elements of operational design, the principles of war, the principles of training, the current Army Training and Readiness Evaluation Program (ARTEP) standards, objectives, and criteria. Although it was not necessary to compare and contrast each and every aspect of the evaluation criteria, it was necessary to extrapolate those portions that are applicable to the planning, integration, and execution of close air support.

The first set of evaluation criteria was based upon the elements of operational design as contained within Joint Publication 3-0, *Doctrine for Joint Operations*. In developing campaign plans and operations, Joint Force Commanders employ operational art based upon the strategic direction and guidance they receive from their leaders – whether CINCs or the National Command Authority.³ Operational art encompasses several facets or “elements of design.” The elements of operational design provide the overarching criteria in planning campaign plans and operations. As such, many of these elements provided the evaluation criteria used to determine the answer to the research question. Currently, joint doctrine identifies 14 elements of operational art.⁴ In applying these operational elements to answer the research question, the following have the greatest influence over the ability for the USAF and U. S. Army to fight as a combined arms team.

Synergy: The key to synergy is the ability of the joint force "...to integrate and synchronize the wide range of capabilities at their disposal into full dimensional operations against the enemy."⁵ In this concept, integration is the key – the ability for the Air Force and Army to integrate close air support into the ground forces' scheme of maneuver and fire support plan.

Simultaneity and Depth: This concept brings "...force to bear on the opponents' entire structure in a near simultaneous manner..." with the "...goal to overwhelm and cripple enemy capabilities and enemy will to resist." "Simultaneity also refers to the concurrent conduct of operations at the tactical, operational, and strategic levels."⁶ For the purpose of this research project, simultaneity will only be considered at the tactical level.

Simultaneity therefore, refers to the combined arms effect the force will inflict upon the enemy. Combined arms fires includes all fire support means available, not only organic to each maneuver force, but also non-organic weapon systems that can be employed or apportioned to a supported tactical commander (dedicated on-call, preplanned, or immediate CAS).

Anticipation: Is the ability for Joint Force Commanders – or commanders of any force for that matter – to anticipate enemy actions or environments which will allow them to exploit their battlefield successes and inflict maximum punishment upon the enemy.⁷ In order to develop or successfully employ this concept, commanders and units must be trained to rapidly request, integrate, and synchronize all available fire support assets, especially CAS aircraft.

Balance: This operational element is in reference to task organization – the proper "mix of forces and capabilities within the joint force as well as the nature and timing of

operations conducted.”⁸ Once again, task organizing a force for combat is basic. The difficulty is in the ability of the force to integrate and function as a synergistic warfighting team. Training, training, training is the key to successful air-ground integration/combat readiness.

Timing and Tempo: Close Air Support plays a critical role in this element of operational art. “Timing refers to the effects achieved as well as to the application of force...they selectively apply such capabilities in a manner that synchronizes their application in time, space, and purpose.”⁹ Close Air Support can provide the necessary fire support required to support the ground maneuver element when other fire support capabilities are unavailable (tempo). The simultaneity of CAS with other fire support systems focuses on the timing aspect of this element and acts as a force multiplier when attacking the enemy’s forces or disrupting his decision cycle.¹⁰ In addition to the elements of operational design, the principles of war play a critical role as evaluation criteria.

The principles of war “...are the enduring bedrock of U. S. military doctrine...”¹¹ Furthermore, they cover the entire framework of warfare at the strategic, operational, and tactical levels. As with all evaluation criteria contained within this document, the author will remain focused at the tactical level. Unlike the elements of operational design, each and every principle of war has applicability to the issue of close air support. As defined by Joint Publication 3-0, these principles are listed and defined below, and will be discussed in greater detail within the analysis section.

Objective: “To direct every military operation toward a clearly defined, decisive, and attainable objective.”¹² In combat operations, the objective is to destroy the enemy’s

warfighting capability and will to fight. The integration of close air support plays a critical role in achieving this objective.

Offensive: “To seize, retain, and exploit the initiative.”¹³ This principle is one of the most important in regard to close air support. Air power by its very nature is offensive.¹⁴ The ability for CAS to exploit success and keep the enemy off balance is key to victory. The synchronization of CAS with other fire support weapons plays a vital role in accomplishing this objective.

Mass: “To concentrate the effects of combat power at the place and time to achieve decisive results.”¹⁵ In order to accomplish this objective, planners must focus on detailed planning as well as the command and control necessary to mass CAS, to include its integration with other fire support systems, in order to achieve the desired effect.

Economy of Force: “...is the judicious employment and distribution of forces.”¹⁶ Regarding close air support, this principle is reflected by the allocation and apportionment process; however, the ground combat commander must identify his requirement early in this process.

Maneuver: “The purpose of maneuver is to place the enemy in a position of disadvantage through the flexible application of combat power. Maneuver is the movement of forces in relation to the enemy to secure or retain positional advantage.”¹⁷ Close Air Support plays a critical role in applying combat power against enemy forces, thereby permitting friendly forces the freedom of maneuver required.

Unity of Command: Implies there is one commander responsible for accomplishing the objective.¹⁸ This principle is extremely important from the aspect of CAS in that there are two separate service components involved in its successful application.

Security: “To never permit the enemy to acquire [an] unexpected advantage.”¹⁹ This principle is applicable to the security of friendly ground forces during operational pauses, or when necessary to maintain pressure on the enemy or, to continue exploitation operations when other fire support means are unavailable.

Surprise: “To strike the enemy at a time or place or in a manner for which it is unprepared.”²⁰ A cornerstone to offensive operations, surprise is one of the most important principles, that when achieved, will throw the enemy off balance and keep him off balance, thereby creating an environment in which he can be exploited. Close Air Support is a tremendous shock weapon, and when applied with other fire support weapons, will inflict tremendous damage upon the enemy.

Simplicity: “To prepare clear, uncomplicated plans and concise orders to ensure thorough understanding.”²¹ The issue of CAS and this principle of war is often looked at as an oxymoron. The truth is that CAS is never easy, but a highly complex and dangerous method of delivering fire against an enemy. The key to achieving this principle of war is through realistic training, which leads to the next set of evaluation criteria, the principles of training.

The principles of training establish the doctrine governing how the Army prepares its forces for combat operations and for operations other than war. These principles as discussed in Field Manual 25-100 *Training the Force*, and reinforced by those articulated by LTG Collins, USA (Ret) in his book *Common Sense Training*, will serve as evaluation criteria in addition to those previously discussed in an effort to determine the answer to the research question. Although the principles of training are comprehensive, only those

applicable to the subject will be defined as it is these principles that will be applied in the analysis section.

Train as Combined Arms and Services Team. Units must have the ability to function in combat as a team, not only within their own component service, but at the joint level as well. This can only occur if units have a habitual relationship with one another because in preparing for combat, units do not have the luxury of having additional training or extended periods of time to train up for combat missions. If combat necessitates a come-as-you-are approach (due to response requirements), combat forces must practice and possess this maxim as a core competency.²²

Make Commanders the Primary Trainers. Commanders are responsible for the training of their units. Regarding CAS, they must have a deep understanding of airpower – especially tactical air power – and how it is integrated into supporting the ground maneuver element in the full spectrum of armed conflict. In order to accomplish this goal, commanders must ensure the following are accomplished.

- Training must be based upon the unit's combat mission.
- Training must be in accordance with army standards.
- Commanders must have the ability to continuously assess their unit's proficiency.
- Commanders must receive the resources required in order to meet their training requirements.
- Commanders must develop training programs that result in combat-ready leaders, systems, and units.²³

Train as You Fight. The integration of tactical air power with ground operations to include other fire support systems is a difficult task. These skills are highly perishable across a broad spectrum of military occupational specialties, from the Forward Air

Controller (FAC), Tactical Air Control Party (TACP), and aviator, to the ground combat commander and his key personnel. Planning and simulation is facile. The actual detailed integration and execution through realistic training is the most important aspect of synchronizing aviation with ground combat forces. This is the case as it is here where relationships are forged which, until tapped in combat, must be tested, validated and confidence established for confidence among all players.²⁴

Use Appropriate Doctrine. Commanders must ensure that preparation for combat is standardized and that doctrine is the overarching key to standardization. ARTEP standards establish a uniform approach to identifying the critical skills necessary to ensure unit success in combat.²⁵

Train to Sustain Proficiency. Units must be able to sustain combat readiness once it is achieved. CAS is a highly perishable skill for all concerned, not just for the aviator, but with the ground combat element as well. The key is how often training events should be required in order to maintain an accepted level of combat readiness.²⁶

Use Performance Oriented Training. This is actual hands-on practical application. Simulated training will simply not meet the requirement established by this principle.²⁷

The remaining criteria utilized in answering the research question included the Army's Training and Readiness Evaluation Program (ARTEP) standards and Mission Essential Task List (METL) standards, objectives, and criteria. As these standards are rather voluminous, each will be discussed, as required, within the training requirements and analysis sections of this monograph.

Chapter III: Purpose of Close Air Support

What is Close Air Support?

Before examining the contemporary issues relevant to CAS, it must first be defined according to current joint and service doctrine. Joint doctrine defines CAS as:

“...air action by fixed- and rotary-wing aircraft against hostile targets which are in close proximity to friendly forces and which require detailed integration of each air mission with the fire and movement of those forces.”²⁸

Joint Publication 3-09.3, *Joint Tactics, Techniques, and Procedures for Close Air*

Support further describes CAS as not supporting tactical operations solely, but also linking it to the operational art via the air apportionment process. Furthermore, CAS requires “detailed integration” due to its “close proximity, fires, and movement” relative to friendly ground forces, and can support both offensive and defensive operations in order to “destroy, disrupt, suppress, fix, or delay enemy forces.”²⁹

United States Army Doctrine, as described in FM 101-5-1, *Operational Terms and Graphics*, utilizes the same joint service doctrine definition. However, the United States Air Force has its own definition of CAS to include a discussion that further describes that position. *Air Force Doctrine Document 1 (AFDD-1)* defines CAS in the following manner:

“CAS consists of air operations against hostile targets in close proximity to friendly forces; further, these operations require detailed integration of each air mission with the fire and movement of those forces. CAS provides direct support to help friendly surface forces carry out their assigned tasks.”³⁰

AFDD-1 elaborates by stating that within the scope of its definition, CAS can be a force multiplier when combined with other surface and air operations in order to produce operational level effects against the enemy. However, the document also offers a disclaimer that the uncertainty of the situation, combined with the tremendous

proliferation of surface to air weapons, makes CAS “especially challenging,” and that “CAS produces the most focused but briefest effects of any counterland mission; by itself, it rarely achieves campaign-level objectives. However, at times it may be the more critical mission by ensuring the success or survival of surface forces...to be most effective...CAS should be used at decisive points in a battle and should normally be massed to apply concentrated combat power...”³¹

Each of these definitions, Joint, Army, and Air Force, exert tremendous influence on how each of the services view the role of CAS in combat operations. This will be discussed further within the analysis section of this monograph. First, a discussion of past, present, and future applications of this method of fire support.

Chapter IV: Defining the Role of Close Air Support: Past, Present, and Future

Background Information and Issues Relevant to Close Air Support

The use of aircraft to provide close air support to ground forces began to emerge during WWI when cooperation between air and ground forces was established for the purpose of destroying enemy artillery positions. Unlike today, these missions were pre-briefed due to the absence of communications between air and ground forces. The use of air forces to increase a ground commander's lethal punch was recognized; thus the genesis of the advancement of air/ground integration.³² Although the United States recognized the potential of the integration of attack aviation with ground forces, it was the Russians that fully exploited the concept of close air support integration as a combined arms weapon.³³

As the first architects of the operational level of war, Russian military theorists determined that their aviation, as an operational element, must be an integral part of maneuver warfare and combined arms warfare. As such, aviation must be integrated at all costs at the strategic, operational and tactical levels of war. The Soviets believed that "...the modern airforce was perceived by the Soviet operational scholars as an essential partner in the action of each of the operational manoeuvre ground echelons. Hence, they defined the role of air power according to the following order of priorities:

synchronization of the operational manoeuvre and assurance of its continuity through simultaneous action linking the actions of the various echelons, deployed along the operation's entire depth, into a coherent occurrence; preservation of the operational momentum by wearing down the rival forces, assuring the integrity of friendly forces, and developing a high rate of activity along the entire depth of the operational space;

accelerating the materialization of the operational shock by means of interrupting the function of the rival system, impairing its essential mechanisms, and conducting deep interdiction..." and pertaining more closely to the issue of close air support, "...assisting the various tactical elements in solving their specific problems by providing them with close support."³⁴

Current Issues/Concerns

Present day issues regarding close air support revolve around the concept of service doctrine and training. This section will address both issues and will include an overview of what the future will hold for close air support.

The definition of CAS from the joint, Army, and Air Force perspective has been discussed, and although each service appears to have complimentary definitions, each service also has different opinions as to just who should provide CAS. The Army recognizes the need to augment its organic arsenal with fixed-wing close air support. Army doctrine states that "CAS can enhance ground force operations by delivering a wide range of weapons and massed firepower at decisive points. It can surprise the enemy and create opportunities for the maneuver or advance of friendly forces through shock action and concentrated attacks." Concerning the issue of who should provide CAS, the Army believes that "Air Force, Navy, and Marine Corps aviation may be required to provide significant air support to Army forces during the entry stage of force-projection operations."³⁵

The issue of CAS is a contentious subject within Air Force circles in that many believe that the Air Force should either totally sever, or drastically reduce, the close air support relationship with the Army. Colonel John Warden, USAF (Ret), author of *The*

Air Campaign: Planning for Combat, defines close air support as “any air operation that theoretically could and would be done by ground forces on their own, if sufficient troops or artillery were available.”³⁶ Through this statement it appears that Warden is proposing that if the Army had sufficient resources of its own, such as other weapon systems, i.e., attack aviation (attack helicopters) and artillery, it would not have a requirement for CAS. Warden also implies that Army Commanders experience problems when attempting to differentiate between CAS requirements and requirements for other types of air operations (air interdiction, counter-air, etc). As such, he expresses a concern that ground commanders will tie up or over-influence the apportionment process, over-task aircraft resources with CAS requirements, and neglect to commit adequate resources to other, more important air operations. That argument is extremely weak in that Army doctrine and training focuses on operational art, fighting a threat throughout the entire depth of the theater of operations, and not just the close tactical fight where CAS is employed. Furthermore, the U. S. profession of arms stresses the operational level of war – an art tested and validated during the most recent large-scale conventional war – Desert Storm. Warden contends that ground commanders are concerned primarily with the immediate front.³⁷ His argument also states that solely by virtue of Air Force and Army doctrine, each service’s view concerning air power are in diametric opposition. Today’s joint doctrine does not support such an assertion and planners understand the complimentary nature of airpower – complimentary in terms of the strategic, operational, and tactical application of aviation.

Warden recommends change as to the employment of close air support. He believes the answer to CAS lies in the concept of the operational reserve – similar to the manner

in which ground force commanders' employ reserves. He envisions two primary type missions: first to achieve a breakthrough of enemy lines (a positive opportunity); second, to stop an enemy breakthrough (a negative opportunity).

In such cases, Warden proposes the diversion of air assets from other missions, not the allocation of aircraft to specific missions. Truly not CAS as currently defined by doctrine – it is more similar to immediate air interdiction; defined as:

“Air operations conducted to destroy, neutralize, or delay the enemy's military potential before it can be brought to bear effectively against friendly forces at such distance from friendly forces that detailed integration of each air mission with the fire and movement of friendly forces is not required.”³⁸

Warden makes no mention of the requirements of CAS' detailed integration, as well as the command and control requirements with ground forces. Warden gives the impression that CAS, in the traditional sense, is entirely too difficult to coordinate and consumes too many assets that could be more efficiently utilized in the performance of another mission.³⁹ Given these attributes, Warden imparts the distinct impression that given his belief that ground commanders do not understand the issues relative to air power, the USAF should not directly apportion sorties specifically devoted to CAS. With extra ground forces made available, why offer up CAS sorties? The fallacy is that Colonel Warden confuses CAS with “interdiction,” and does not appreciate the combined arms capability CAS brings to the battlefield.

In contrast to Warden's argument, Joint Publication 3-09.3 *Joint Tactics, Techniques, and Procedures for Close Air Support* purports that CAS may be employed at any time and place where friendly forces are located in close proximity to the enemy. Ground combat commanders utilize CAS to increase their combat power by augmenting their

organic fire support systems. CAS provides the commander with a fast, responsive, and accurate three-dimensional weapons system.⁴⁰

Although Warden does not advocate the elimination of Air Force support to ground forces in general, or to the Army in specific, there are officers within the Air Force who do support that elimination. A United States Army School of Advanced Military Studies monograph was recently published regarding this issue. The monograph author's thesis was "The Future of Fixed-Wing Close Air Support: Does the Army Need it to Fight?" The author's answer to that thesis question was no, the Army does not need the fixed-winged close air support now or in the future. He based this decision primarily upon two assertions.⁴¹

First, the Army currently possesses the assets required to fight and win its battles – Army attack helicopters and artillery systems. He perceives the primary threats that these systems must (and will) defeat as armored weapons systems: tanks, artillery, and infantry fighting vehicles. His second point – that the Army can better integrate its own organic weapon systems than those of another service – specifically USAF tactical air (TACAIR) assets.⁴²

This author, like so many, is belabored by a deep misunderstanding of the relationship of CAS to other supporting arms and regards CAS as a replacement for other fire support systems (such as a lack of artillery) rather than as a critical component of combined arms warfare. It is the combined arms effect of CAS when employed with other systems (artillery, naval surface fires, direct fire weapons, and electronic attack weapon systems) that provides devastating effects upon an enemy. The author draws the analogy of the use of CAS during amphibious operations due to the unavailability of artillery. In this

scenario, CAS would play a significant role; however, not as a replacement or alternative system to artillery, but as complimentary to those weapon systems available during an amphibious operation, such as naval surface fire support. Furthermore, the author states that the USAF would be more beneficial to the Army by employing its fixed-wing assets in interdiction rather than CAS (fight the deep battle with no detailed integration with ground forces). He goes on to state that fixed-winged CAS should be the exception vice the rule.⁴³

The author debates another argument -- that the Army's attack helicopter can provide CAS -- and further states that the attack helicopter is best employed against enemy armor. Both statements are technically correct; however, the Army sees its attack helicopter battalions as deep maneuver units for interdiction, not necessarily for CAS. The author cites FM 1-100, *Army Aviation in Combat Operations*, stating that "fixed-wing airpower is considered 'fire support' by Army doctrine while rotary-wing air is considered primarily a 'maneuver' asset by Army doctrine. Therefore, fixed-wing air becomes synonymous with close air support."⁴⁴

Furthermore the author forwards that as Army doctrine does not unequivocally state the need for fixed-wing CAS to support operations, it therefore does not need it. He states that the Army "must be capable of achieving decisive victory" and that it currently possesses the combined arms capability to achieve that victory.⁴⁵ The Army believes that "...because of their mobility and firepower, attack helicopters are the quickest and most effective means of stopping enemy tank penetrations. They can be given missions with or without other maneuver elements."⁴⁶ The Army prefers to employ attack helicopters in an interdiction role as a maneuver unit that can mass its effects upon an enemy force,

ensuring decisive results early, before enemy and friendly ground forces make contact. Rotary winged aircraft employed in a CAS role negate large-scale maneuver unit tactics because of the need to command and control the aircraft and integrate them with ground forces. Therefore, Army doctrine focuses upon requesting and allocating the preponderance of fixed-wing (in fact, Army doctrine implies fixed wing CAS, not rotary wing) CAS at the division level, with some CAS being retained by the Corps.⁴⁷

Much of this debate has been settled through the various vision statements associated with each of the services including joint forces. *Joint Vision 2010*, *Army Vision 2010*, and *Global Engagement, A Vision for the 21st Century Air Force* each address the issue of close air support and its capacity to be resourced and employed in future operations.

Future Vision of CAS

Joint Vision 2010 identifies four operational concepts: dominant maneuver, precision engagement, full dimensional protection, and focused logistics; the sum of which achieving "... Full Spectrum Dominance... the key characteristic we seek for our Armed Forces in the 21st century." ⁴⁸ "To protect our vital national interests we will require strong armed forces, which are organized, trained, and equipped to fight and win against any adversary at any level of conflict."⁴⁹

In preparation for the 21st century threat, "the bulk of our Armed Forces will be engaged in or training for worldwide military operations. In these operations, we will largely draw upon our conventional warfighting capabilities."⁵⁰ "Precision engagement... will consist of a system of systems that enables our forces to locate the objective or target, provide responsive command and control, generate the desired effect, assess our level of success, and retain the flexibility to reengage with precision when

required.”⁵¹ This is a grand way to describe this ability to integrate aviation with ground combat operations. The TACP team or FAC will locate the target and provide the required command and control to the CAS platform. The CAS platform will provide the desired effect through servicing the target. The TACP/FAC will assess the level of success and re-engage the target with the CAS platform with precision if needed.

Derived from the Army’s vision statement, the new FM 100-5 *Operations* (Revised Final Draft) discusses the primary function/role of the Army and Air Force in future operations. Both roles, Army and Air Force require a close relationship concerning the employment of close air support. Among the primary functions the Army must perform, two imply a link to the future employment of CAS “...to organize, train, and equip forces for the conduct of prompt and sustained combat operations on land – specifically, forces to defeat enemy land forces and to seize, occupy, and defend land areas...” and “...to organize, equip, and provide Army forces, in coordination with other military services, for joint amphibious, airborne, and space operations and to provide for the training of such forces, in accordance with joint doctrines.”⁵²

Among future functions the Air Force must be prepared to perform, one specifically addresses the issue of CAS “...to organize, train, equip, and provide forces for **close air support** and air logistic support to the Army and other forces.” Both of these roles are defined by Department of Defense Directive 5100.1.⁵³ Service and joint vision statements outline the necessity to plan for and conduct CAS in future operations.

Training Philosophy, Standards, and Status

“Realistic and stressful training has been the primary way to keep readiness high...Such training, consisting of carefully balanced programs of individual, crew, and larger organizational training and assessments, is central to training the vary we will fight. From individual or crew mission simulators, through full-

blown field exercises at home or abroad, realistic, evaluated training is and must remain our best combat multiplier.”⁵⁴

Joint Vision 2010 clearly outlines the over-arching philosophy that will propel United States Armed Forces well into the 21st century. Augmenting *Joint Vision 2010*, *Army Vision 2010* “...foresees a capabilities-based Army with the proper mix of heavy, light, and Special Operations Forces (SOF)...trained, ready, and equipped to conduct full-spectrum operations...as part of the joint warfighting team envisioned in *Joint Vision 2010*.”⁵⁵ In its pursuit of full spectrum dominance the Army readily admits that it will never fight as a stand-alone force, and that it must be fully integrated at the joint, multinational (coalition), and non-governmental levels.⁵⁶

Army future training will be guided by the pending and revised version of FM 100-5 that recognizes the complexity of integrating close air support with ground combat forces, especially when conducting coalition/multi-national operations. The document stresses the need to establish a habitual relationship between forces in an effort to eliminate the present ad hoc nature of operational conduct. United States forces must pursue every opportunity to train and develop standard operating procedures in a concentrated effort to increase combat readiness and ensure success in future combat operations.⁵⁷ By this statement, the Army has recognized the need to train in order to maintain its ability to be prepared for large-scale coalition warfare. However, in the transition and preparation for future operations, the Army has the belief that “...experience in the complex operations of the post-Cold War era has taught commanders that the Army cannot afford the luxury of lengthy maintenance and training programs to prepare Army units for new missions.”⁵⁸ This statement implies that there must be a level of combat readiness that will minimize preparation and deployment time

and that a minimum level of readiness must be both achieved and maintained. The integration of fire support weapon systems is one of the most complex aspects of modern warfare, with CAS being one of the more difficult functions. Training must be assigned a high priority due to the perishability of these skills among flight crews, TACP teams, command and control nodes, and ground force commanders and their units.

The Army's new FM 100-5 introduces the Army Universal Task List (AUTL). Its purpose is to establish "...the tactical tasks of the AUTL are an evolution of the Army battlefield operating systems (BOS). The tactical tasks are recognized by the joint community and provide a linkage to how the other services operate during tactical operations."⁵⁹ Of the six AUTL top-tier tasks, two have direct application to the integration of close air support. They include:

- Employ Firepower (Army Tactical Task 3): Involving the application of fires against enemy air, ground, and sea targets. Task includes artillery, mortar and other non line-of-sight fires, NGF, close air support, and electronic attack.⁶⁰
- Exercise Command and Control (Army Tactical Task 5): The method by which commanders exercise command and control with personnel, equipment, communications, facilities, and procedures in order to integrate and control forces for combat operations.⁶¹

With the Army and Air Force actively developing the training philosophy of the future, it is appropriate to review how these two services presently develop their training standards/programs – specifically those standards dealing with the planning and integration of CAS.

Army Training and Evaluation Program (ARTEP)

Although the Army employs volumes of Army Training and Evaluation Program (ARTEP) manuals covering a multitude of operations and command echelons, this monograph narrowed the focus to those standards inherent to the infantry brigade and battalion.

The purpose of the ARTEP, specifically ARTEP 7-30-MTP *Mission Training Plan for the Infantry Brigade (Command Group/Staff)* is to "...provide Active and Reserve Component corps, division, and brigade commanders and staff with a descriptive, mission-oriented training program to train the infantry brigade to perform its critical wartime mission/operations."⁶² The Mission Training Plan (MTP) is a document used to guide the training of the brigade command group and its staff. Specific uses include: validate the command group/staff's training program; exercise combat tasks, conditions, and standards under a simulated combat environment; and evaluate the command group/staff's ability to perform its wartime tasks within a simulated combat environment.⁶³ Each unit, in this instance the infantry brigade, must develop a Mission Essential Task List (METL), which are those critical skills the unit must perform in order to accomplish its wartime function. Once the brigade has developed its METL, it is expected to train all collective tasks and battle tasks to the standards contained within the MTP.⁶⁴ Within each MTP, the brigade, based upon the type mission or operation they must accomplish, selects collective tasks referred to as maneuver tasks. The fire support section of the operation-to-collective tasks matrix establishes, for the infantry brigade command group/staff, a training requirement as to the employment of air support (7-6-1913) for all operations/locations which includes: the offense, defense, and retrograde,

within the tactical, main, and rear command posts.⁶⁵ The leader and critical tasks that must be accomplished in order to ensure the effective planning and integration of close air support with other fire support systems is fairly well defined. At the brigade level primary tasks include:

- Fire Support Element (FSE) and Tactical Air Control Party (TACP) plan for CAS.
- Brigade S3 staff processes planned CAS requests.
- Brigade S3 staff plans for air interdiction.
- Brigade S3 section coordinates immediate CAS requests.

ARTEP 7-20-MTP, *Mission Training Plan for the Infantry Battalion* accomplishes the same purpose, technically speaking, as the brigade level ARTEP, albeit the focus is at the battalion level. This document fails to address detailed planning and integration requirements needed for the effective employment of close air support. The only aspect of CAS that is addressed focuses upon immediate CAS and the procedures for requesting it.⁶⁶ The absence of such standards played a vital role in the analysis section of this document where the issue of readiness, as reflected by current trends in training, is evaluated.

Air Force Training Standards

Air Force training standards concerning the employment of close air support are set forth within several documents – chiefly because there are multiple command and control personnel, agencies, and aircrew devoted to the employment of Air Force TACAIR. In an effort to remain focused at the tactical level as well as upon those functions pertaining solely to Air Force/Army CAS integration, the key training standards are reviewed as outlined within Air Force Instruction (AFI) 13-102 *Air Support Operations Center*

(ASOC), Tactical Air Control Party (TACP), and Air Liaison Officer Training and Evaluation Procedures. However, before a discussion of these training standards is undertaken, it is important to understand the functions of each of these agencies and individuals.

“The Air Support Operations Center is the primary control agency component of the Air Force’s Theater Air Control System (TACS) for the execution of CAS. Collocated with the senior Army echelon’s FSE, normally the Corps FSE, the ASOC coordinates and directs CAS in support of Army Operations.”⁶⁷ The function of the ASOC is to “process Army requests for immediate CAS which are submitted by ground maneuver forces...directly to the ASOC. Once the Army approves these immediate requests, the ASOC tasks on-call missions or diverts scheduled missions (with Army approval) to satisfy those approved immediate requests.”⁶⁸

The command and control function of providing terminal control of CAS aircraft belongs to the Tactical Air Control Party (TACP). “TACPs are located with Army maneuver units from battalion to corps.” “The TACP mission is to advise and assist the ground commander in planning, requesting, and coordinating CAS.”⁶⁹

Liaison functions between the Air Force and Army are conducted primarily through the Air Liaison Officers (ALO). “The ALO is the officer member of the TACP. The ALO advises the commander on CAS employment and assists with planning and coordination. The ALO may also perform terminal control.”⁷⁰

AFI 13-102 identifies minimum standards for training and evaluation of ASOC, TACP, and ALO personnel. The key standards of training for the ASOC personnel are

subdivided into seventeen categories, of which, only five focus on Air Force/Army CAS integration. These five standards address:

- Mission/Organization of Wing/Group/Unit (to include Army SOPs).
- Navigation (to include Army symbology).
- U. S. Army (Mission/organization, TOC Staff, SOPs, employment doctrine, and weapon systems).
- TACS/AAGS (Theater Air Control System and Army Air Ground System structure and fire support deconfliction).⁷¹

Training requirements for TACP personnel, to include Air Liaison Officers, are subdivided into nineteen categories, all of which focus upon service specific training with the exception of these seven areas:

- Mission/Organization of Wing/Group/Unit (to include Army SOPs).
- Navigation (to include Army symbology).
- U. S. Army (Mission/organization, TOC Staff, SOPs, employment doctrine, and weapon systems).
- Joint Fire Support (Army Attack Aviation).
- TACS/AAGS (Theater Air Control System and Army Air Ground System structure and fire support deconfliction).
- Capabilities/Characteristics of battlefield weapon systems (theater specific for both air/ground systems).
- Request and plan a CAS mission (this pertains to the actual CAS platform and the conditions i.e., visual, system aided, and night vision goggles). This standard does not address the integration aspect with Army planners.⁷²

Interestingly enough, none of the training standards addressed within this document articulates the specific requirements associated with detailed and integrated planning between Army S-3/G-3, to include FSE personnel, and TACP/ALO staff members. Furthermore, none of these training standards focus upon unit chaining, or linking Air Force training standards to Army ARTEP standards, nor do they discuss the methodology of how the Army trains. Two additional points are worthy of mention. The first method of measuring these training standards is by unit or group approved measurement devices. As such, there is no common or standardized method of syllabus design, only the broad overarching requirement. It is left to unit commanders to determine the specifics of each training requirement.⁷³ The final point of interest is that these training standards are based upon annual training requirements and certification.⁷⁴ When one considers the complexity of the integration of CAS with ground forces, the question of sustainability is often raised. As these skills are extremely perishable, one could argue that it is not possible to maintain an acceptable level of combat readiness with an annual requirement only. However, it should be noted that Air Force terminal attack control trainers' (the key word is trainers) training requirements include a total of 10 categories, the following of which may be linked directly to Army and Air Force integration issues. These categories include:

- Mission Preparation (Map datum, timing).
- Coordination (with Army staff to include S2, S3, FSE, Naval Gunfire LNO, Avn LNO, and ADA).
- Integrating CAS with other fires (surface fire support, SEAD, Airspace Coordination Areas, Avn LNO, Attack Helicopters, and ADA).

- Marking the target (Indirect, Laser, Infrared).
- Battle Damage Assessment (BDA).⁷⁵

Although these training standards are for TAC Trainers only, they would provide the detailed and core standards/requirements for all ALO and TACP personnel if integrated into the current training standards. Additionally, similar to those previously mentioned, these training standards are required on an annual basis, and as such raise the same questions of proficiency maintenance.⁷⁶ An additional point to address is that both Army and Air Force training requirements are too ambiguous, and neither articulates the specific issues involving integration. Training documents should include the specific functions required to achieve the detailed integration of CAS with ground combat operations.

Army Training Observations and Lessons Learned

Short of combat, training is the best opportunity to execute the tactics, techniques and procedures associated with warfighting, and as such will be of primary importance in determining the current warfighting capability between the United States Army and the United States Air Force. The Center for Army Lessons Learned (CALL) devoted an entire newsletter recently to the issue of close air support. The CALL newsletter is produced by a staff consisting of several subject matter experts, both officers and non-commissioned officers of the United States Army and Air Force, whose responsibility is to gather and analyze lessons learned from major exercises, all in an effort to inform, educate, and increase the warfighting capability of their respective services.⁷⁷

Within the document CALL identified three major trends or problems that brigades continually make during their National Training Center rotation. These trends focus

upon the lack of timely targeting, the failure to push CAS to task forces, the poor understanding of “close CAS” procedures, and the poor suppression of enemy air defenses (SEAD).⁷⁸

The first major trend, lack of timely targeting, results from a problem with the battle staff’s ability and method by which targets are identified and approved by the supported commander. This targeting process results in a lack of timely decisions as well as the resultant ineffectiveness and unresponsiveness of CAS. The discussion contained within the lessons learned identified several reasons for this failure and included several important observations.⁷⁹ These observations included:

- Commanders did not have a vision nor did they articulate how CAS would be integrated with their maneuver forces.⁸⁰
- Battle staffs did not routinely update CAS high payoff targets (HPT) during operations.⁸¹
- Battle staffs did not include the TACP teams during the planning and wargaming process.⁸²
- Command posts were not organized sufficiently to facilitate the integration of CAS. For instance, staffs would not routinely conduct targeting cell meetings, nor did Air Liaison Officers and Fire Support Officers work together.

Additionally, the ALO/FSO would not anticipate nor be prepared for CAS missions when coming on station (which would delay their employment), not to mention the appropriate high payoff target.⁸³ Battle rhythm of the staff is crucial to the effective planning and employment of CAS; the ALO/FSO must work together in considering the effective integration of all fire support systems.

The second major trend identified is a failure to push CAS to task forces/battalions and a poor understanding of CAS terminal control procedures.⁸⁴ The observation was made by Army and Air Force Observers/Controllers that brigades and regiments tend to maintain control of all targeting and execution, seldom allocating CAS down to the task force/maneuver battalion/squadron level.⁸⁵ In this situation, with no CAS allocated down to the task force, battalion, or squadron level, these units will not plan for its integration. The result was that brigade level TACP teams were attempting to control CAS from remote locations, thereby relieving battalion level TACPs of providing terminal control of CAS within their own sector, resulting in fratricide.⁸⁶ Furthermore, with the brigade's attention focused to the deep fight, they are not giving the necessary attention required to plan for CAS. How then can CAS be effectively employed or integrated with ground forces, if it is being planned for and controlled by forces not in direct contact with the enemy? It is not surprising that this type of situation results in fratricide, as illustrated by this lesson learned. If the brigade is going to focus upon the deep fight to create the conditions on the battlefield for its maneuver units, then what it must focus upon is primarily air interdiction, with a limited amount of CAS retained for forward-deployed terminal control. The majority of the allocated CAS should be available to the main effort in an attempt to overwhelm the enemy with combined arms fires. This requires that the main effort's battle staff must plan for CAS and their unit's TACP teams must provide the terminal control for CAS, not only from the standpoint of integrating CAS with the fire support plan, but also to reduce the risk of fratricide.

The third major trend focuses upon the issue of suppression of enemy air defenses (SEAD) and the difficulty units have in coordinating the employment of fire support

systems to accomplish that task. This problem exists primarily because battle staffs do not plan for it, but deal with the problem in a reactive manner.⁸⁷ This occurs for several reasons to include:

- Units not identifying enemy air defenses as a priority information requirement.⁸⁸
- Once identified as a high payoff target, they are not allocated the fire support resources to attack or suppress them.⁸⁹
- SEAD is not planned for nor rehearsed.⁹⁰

All of these deficiencies contribute to a delay of timely and responsive CAS, as well as the ineffective employment of CAS platforms.

It is the ALO's responsibility to work with the FSO and plan for the coordination of SEAD. Additionally, he must understand the total resources available to him in an effort to suppress a prohibitive threat to CAS aircraft. SEAD is a joint responsibility and as such it should be solved jointly; SEAD is not just an Army problem. Resources and coordination are available through the Air Support Operations Center or the Airborne Battlefield Command and Control Center (ABCCC).⁹¹ These command and control agencies focus upon offensive air support. They have the authority and resources to coordinate and manage airborne assets which can provide responsive SEAD whenever ground forces may not be in a position to provide it with their organic weapons. The key to leveraging the capabilities inherent to these agencies may be found early within the planning phase of an operation, during which the ALO enjoys a critical role. The Air Liaison Officer's in-depth knowledge of air operations and command and control must be exploited by the ground force commander and his battle staff to ensure the effective employment of CAS.⁹²

Air Force Training Observations and Lessons Learned

Additional lessons learned have been documented by the United States Air Force, Air Ground Operations School's Counterland Close Battle Library. The white paper titled, *"What the New ALO Needs to Know: White Paper on TACP Lessons Learned"* (Major Lasch and Staff Sergeant Lucas) reflects a compilation of both authors' experiences during recent National Training Center (NTC) rotations.

Although the primary target audience of the document focuses upon newly assigned brigade/battalion air liaison officers, it contains several pertinent and recurrent trends or pitfalls that continuously prohibit the integration and execution of CAS. The white paper also stresses the importance of establishing liaison functions with the Army brigade/battalion staffs.

Within the article the authors are very clear about the shortfalls of TACPs, specifically ALOs and their enlisted tactical air controllers (ETACs). TACPs are ordinarily very well trained at their control function, but not in liaison responsibilities.⁹³ Additional ancillary problems, other than the primary failure of TACP/ALO centering on integration and training, included poor attitudes and personnel assignment policies. Observations that lead to the authors' conclusion include the following:

- Many ALOs view their assignment more as punishment than as a conduit for ensuring responsive close air support. Additionally, many do not believe the Army perceives them to be an important asset.⁹⁴
- Extreme reliance upon the Army/Air Force Memorandum of Agreement (MOA) regarding the assignment of air force personnel to the army. These functions are limited to two primary areas – liaison and control – period. The MOA was

developed in order to prevent the assignment of non-mission essential duties such as mess or guard duty.⁹⁵ Unfortunately, when not conducting mission oriented training it is the non-essential type duties that forge unit cohesiveness.

- ALOs/TACPs are retained at the brigade level and task organized to battalions based upon the brigade's CAS plan.⁹⁶ In this case habitual relationships are not developed at the battalion level.
- TACPs execute the brigade CAS plan even when assigned at the battalion level. In this situation, brigade TACP teams are forward deployed with maneuver battalions, but fail to integrate CAS with the battalion's fire support plan or scheme-of-maneuver.⁹⁷
- TACP/ALO are not assigned to battalion level units until immediately before training deployments, thus not permitting a professional relationship or battle rhythm to be developed.⁹⁸
- ALOs have a responsibility to facilitate the Army's senior leadership's understanding of CAS and its integration during ground combat operations.⁹⁹
- The authors imply that the Air Force does not consider CAS as a battlefield operating system (BOS), rather as an asset that should be used against critical targets at the critical time – an implication in keeping with Col Warden's earlier assertion regarding CAS. This statement also implies that the Air Force does not prefer immediate CAS, but rather preplanned CAS.¹⁰⁰

The recurrent theme that emerges from tactical lessons learned, both from Army and Air Force perspectives, is that the lack of a habitual relationship between the services

prevents the level of integration, in both planning and execution of CAS, necessary to create a synchronized combined arms team.

Chapter V: Analysis and Evaluation

This chapter focuses upon the application of evaluation criteria (discussed in Chapter II) and establishes the answer to the thesis question: Can the United States Army and the United States Air Force fight as a combined arms team (specifically from a CAS perspective)? Two primary areas are addressed – doctrine and training.

Does Doctrine Establish the Need for CAS?

The foundation of present and future doctrine pertaining to close air support is strongly upheld by the elements of operational design and the principles of war and is expressed by both existing doctrine, and by joint and service component vision statements. Synergy, simultaneity and depth, anticipation, balance, and timing and tempo, all critical components of operational art, may be achieved through the employment of close air support throughout the full depth and breadth of the battlefield, including both the tactical and operational levels of warfare. From the perspective of synergy, the integration of CAS with other weapon systems and maneuver can clearly overwhelm an adversary's ability to cope with the situation, thus leading to more favorable conditions for friendly forces to exploit. CAS facilitates simultaneity and depth in that it can strike the enemy concurrently with other weapon systems throughout the entire area of operations. For commanders to be able to capitalize upon enemy actions, they must be prepared not only to anticipate their adversary's action, but to respond as well. CAS facilitates the commander's ability to respond to dynamic situations by its rapid ability to allow the attack of enemy forces at decisive points, thereby creating positive results and additional opportunities. Balance is achieved via the air apportionment process, that is achieving the proper mix or task organization of forces.

Throughout a campaign, the balance of CAS apportioned will depend largely upon the type of operation the force will be conducting (offensive, defensive, etc.), and which force will be designated as the JFC's main effort. For this reason the apportionment of CAS will be dependent upon several factors, to include the requirements of the ground maneuver force, and the overall targeting strategy of the joint force as a whole. The final element of operational design, timing and tempo, supports CAS within doctrine by stressing the importance of the integration and synchronization of CAS with other fire support systems and maneuver.

As the elements of operational design are reflected within current and future CAS doctrine, so are the principles of war equally nested. Each of these principles is imbedded within joint and service doctrine and directly support the employment of CAS. Specifically relating to CAS, doctrine emphasizes the principles of mass, offensive, maneuver, surprise, and objective. Mass permits ground force commanders to apply a concentrated effort of airpower at the appropriate time and place in order to achieve decisive results against the enemy. The employment of CAS in the offensive, combined with the effects of other weapon systems, keeps the enemy off balance and facilitates maneuver of friendly ground forces while inhibiting or preventing enemy maneuver. CAS employs the principle of surprise based upon its response and three-dimensional capability to include the synergy with other systems. When the enemy has a counter-action to one system, they must now deal with CAS, thus adding to the complexity of the situation. The sum total of effects which CAS inflicts upon the enemy, and contribution to the friendly force commander's ability to accomplish his mission, facilitates the

achievement of the endstate and accomplishment of a clearly defined and decisive objective.

Principles of war that are not fully realized through the employment of CAS include unity of effort, economy of force, and simplicity. Although doctrine supports these principles, the implementation of them in combined arms training exercises is not often achieved. This results not from inadequate doctrine, but a deficiency in how these two services train and integrate with one another. CAS involves the synchronization of numerous players – Army and Air Force commanders, their staffs, liaison officers, and the command and control infrastructure, all of which, unless well trained work (albeit unknowingly), against the other. The “chain” of success in the employment of these three principles is as strong as its weakest link. As discussed above, there are many friction points throughout.

The issue of close air support is firmly supported by current and future doctrine. However, its interpretation by members of the Army and Air Force bring to light a potential disconnect in the employment of CAS.

Is Doctrine Adequately Interpreted by Service Components?

The deduction can be made, from a doctrinal perspective, that though joint and service component doctrine defines and describes CAS in universally accepted terms (to include support relationships), interpretations of doctrine can, and often do, differ between members of the Army and Air Force. These differences in opinion exert a negative influence upon how CAS is apportioned, allocated, and ultimately employed. For example, the Army, from a doctrinal standpoint, considers CAS as a weapons system to be integrated with other organic and non-organic weapons systems in order to provide

overwhelming firepower against the enemy at decisive points, employing principles of war such as mass, offensive, and maneuver. The Air Force concurs with the principle of mass, however, many hold the belief that until the opportunity exists to mass CAS assets at the decisive point, those assets should be apportioned to another, higher priority, such as interdiction. Another fallacy that relates to doctrinal interpretation concerns the notion (by both USAF and USA planners) that CAS should be employed whenever other fire support systems are not available. This interpretation violates several elements of operational design and principles of war – synergy, simultaneity, and balance – principles of war that emphasize mass and surprise. It is interesting that both services entertain the same desire to mass their fire support systems against a threat. The difference of opinion focuses upon which threat should be the decisive point, the ground commander's, the air component commander's or the joint force commander's. This is why the apportionment decision plays a vital role, as air power must be apportioned to meet the requirements of the joint force as a whole, to include the nested mission requirements of functional and/or service component commanders. Aside from doctrine, many differences in opinion stem from training deficiencies. It is this area in which the evaluation criteria pertaining to the principles of training are considered.

Service Training

The Air Force can effectively train and conduct the planning, integration, and control of CAS from a service perspective. Its focus is to ensure its TACP teams can effectively control CAS and its CAS platforms can adequately service targets. The breakdown occurs within the interface or integration with the Army. Both services err in this arena.

The Army does not fully employ CAS in its fire support plans, and the Air Force does not push CAS as a combined arms weapon available to Army commanders.

In the comparison of evaluation criteria as to how the Army and Air Force collectively train, the following principles of training are being ignored: training as a combined arms team; training as you fight; training to sustain proficiency; and in the use of performance oriented training specifically, the lack of jointly agreed upon training standards. This is evidenced through their inability to integrate CAS during the planning phase of an operation where integration is achieved primarily through the actions of staff and liaison officers such as the S3, FSO, and ALO. Much of this lack of integration occurs because units are not habitually associated with one another (ALOs reporting to maneuver battalions, task forces and squadrons immediately prior to deployment). If CAS is not well integrated into the fire support plan, the stage is not set for the execution phase, resulting in unresponsive and poorly integrated CAS with other weapons systems as well as maneuver. As such two mindsets have been forged. The Army believes CAS is too difficult to integrate and that it does not achieve the desired effects, while the Air Force believes that CAS assets are under-utilized. Significant is that although both services recognize this critical breakdown – their failure to integrate at the battle staff level – neither service appears to be actively working to fix the problem. What does appear to be occurring is that each service understands its respective role in warfighting, and focuses its effort upon meeting its own training standards. An integrated performance oriented training program should be developed that will link each service's training requirements in an effort to bridge this gap. Upon development of a common joint training standard, commanders, functioning as the primary trainers (training principle), can design their

individual and collective training programs and exercises to meet this requirement. With the Air Force believing their resources are being misemployed and squandered on low payoff targets, and the continuing issue of fratricide at the forefront, the future may bear witness to the Air Force's desire to escape the CAS function totally.

From an Army perspective, CAS, while desired at the battalion level, is rarely experienced due mainly to its retention at the brigade level or above. As a result of this retention, CAS does not get employed, and when employed it is so poorly integrated that the results appear to be not worth the effort. An understanding of CAS and the art of its employment has not taken root within the Army ranks, and has created the mindset "if I can't depend on it, why plan for it." This gap of mental models must be eliminated if the Army and Air Force endeavor to prepare to function as a joint team in a new world order – an order in which the environment is becoming exponentially more chaotic and complex.

Lastly, a concomitant relationship does exist between training and combat readiness. Combat readiness cannot be achieved without dedicated, realistic training, although units can train every waking moment without having achieved the level of readiness necessary to ensure the defeat of an adversary. The issue of integration, in planning and in its execution, is the systemic and fundamental Achilles heel that deserves and demands each service's utmost attention concerning the employment of close air support.

Chapter VI: Conclusion

Can the United States Army and United States Air Force fight as a combined arms team? Yes, provided key training issues are resolved to include integrated training involving both services that focuses upon universal standards for the planning, integration, and execution of close air support.

The initial concept development stage of this monograph was written with the intent of alerting both Army and Air Force leaders to the critical problem of the successful integration of CAS between the two services. The plethora of material associated with this problem, discovered during the literature review, exposed this issue to be an age old problem which dates back to the first use of aviation as a weapons platform from which to support ground forces. Further research resulted in additional disillusionment as lessons learned are continuously repeated after every training exercise. Why can these two services not come to common ground on the issue of CAS? As the battlefield becomes more uncertain and lethal, so will the planning and integration of CAS become more complex and difficult.

The issue of doctrine (although defined in essentially the same manner by both Army and Air Force), primarily its interpretation, should be further emphasized in a quest to draw near a common understanding of its intent. The training each service conducts is too compartmentalized. For instance, aircraft crews train to attack targets; TACP teams train to provide terminal control of aircraft; and command and control agencies/systems train to provide positive and procedural control of aircraft. The problems challenging CAS focus upon integration. Army maneuver force commanders and principle staff members, Air Force ALOs, TACP teams, FAC(A)s, etc., must make a concerted effort to

spend time together in an effort to train as a single battle staff. The goal – “E Pluribus Unum” – “One Unity Composed of Many Parts.” Major General Jeschonnek, chief of the German Luftwaffe General Staff stated in 1939, that close air support is “the most difficult mission that could be given to the air force” and that CAS missions require “the closest liaison between... commanders and the supported army units.”¹⁰¹

The elements of operational design, the principles of war, and the principles that govern how we train and fight, can provide each of the services the guidance needed to establish a common understanding of doctrine and training philosophy. However, unless the services are willing to dedicate the time, resources, and money required to execute high quality, realistic training, the armed forces will continue the status quo, that is, will continue to disregard lessons learned in the employment of CAS. If the status quo remains the same, no real increase in combat readiness will be realized.

The problem of Army/Air Force CAS integration could not be fully addressed within the confines of this monograph and deserves much greater research and analysis. For the immediate future, both services, in addition to testing new technologies and tactics via their warfighting experiments, should take the opportunity to assess and revalidate their combined arms relationship in the area of close air support. This assessment and revalidation should be undertaken in light of current doctrine, and more importantly, within respective vision statements. To do otherwise would merely continue the “lip service” that currently addresses each services capability. Actions vice words are required.

ENDNOTES

¹ Armed Forces Staff College Publication 1, *The Joint Staff Officer's Guide 1997*, (National Defense University, 1997), 1-11. The National Security Act of 1947 and its associated amendments, to include the more recent Department of Defense Reorganization Act of 1986 implemented several functions that are common to all of the armed services. For the scope of this monograph, we will extrapolate those functions pertaining to the combined arms relationship between the United States Army and the United States Air Force.

² Joint Chiefs of Staff, *Joint Vision 2010*, Joint Electronic Library [CD-ROM], (OC Incorporated: J-7, Joint Staff, May 1997), 9.

³ Joint Chiefs of Staff, Joint Publication 3-0, *Doctrine for Joint Operations*, (Washington D. C.: Government Printing Office, 1 February 1995), III-9.

⁴ Ibid., III-10. Currently, joint doctrine identifies 14 elements of operational art. These elements include: Synergy, Simultaneity and Depth, Anticipation, Balance, Leverage, Timing and Tempo, Operational Reach and Approach, Forces and Functions, Arranging Operations, Centers of Gravity, Direct versus Indirect, Decisive Points, Culmination, and Termination.

⁵ Ibid., III-10 -- III-11.

⁶ Ibid., III-11.

⁷ Ibid., III-12 -- III-13.

⁸ Ibid., III-13.

⁹ Ibid., III-15.

¹⁰ Ibid., III-15.

¹¹ Ibid., A-1. The Principles of War as outlined by Joint Doctrine include: Objective, Offensive, Mass, Economy of Force, Maneuver, Unity of Command, Security, Surprise, and Simplicity.

¹² Ibid., A-1.

¹³ Ibid., A-1.

¹⁴ United States Air Force Doctrine Document 1 (AFDD-1), *Air Force Basic Doctrine*, September 1997, Joint Electronic Library [CD-ROM], (OC Incorporated: J-7, Joint Staff, 15 June 1998), 14.

¹⁵ JP 3-0, A-1.

¹⁶ Ibid., A-1.

¹⁷ Ibid., A-2.

¹⁸ Ibid., A-2.

¹⁹ Ibid., A-2.

²⁰ Ibid., A-2.

²¹ Ibid., A-2 – A-3.

²² U. S. Department of the Army, Field Manual 25-100, *Training the Force*, (Washington, D. C.: Government Printing Office, 1988), 1-3. Other principles include (but for this monograph are not discussed): train to challenge, train to maintain, and train using multi-echelon techniques.

²³ Ibid., 1-5.

²⁴ Ibid., 1-3 – 1-4.

²⁵ Ibid., 1-4.

²⁶ Ibid., 1-4.

²⁷ Ibid., 1-4.

²⁸ Joint Chiefs of Staff, Joint Pub 1-02, *DOD Dictionary of Military and Associated Terms*, (Washington D. C.: Government Printing Office, 1998), 76.

²⁹ Joint Chiefs of Staff, Joint Publication 3-09.3, *Joint Tactics, Techniques, and Procedures for Close Air Support*, (Washington D.C.: U. S. Government Printing Office, 1 December 1995), I-1—I-2.

³⁰ AFDD-1, 49-50.

³¹ Ibid., 50.

³² JP 0-09.3, I-8.

³³ Shimon Naveh, *In Pursuit of Military Excellence*. (London: Frank Cass Publishers, 1997), 229-230.

³⁴ Ibid., 229-230.

³⁵ U. S. Department of the Army, FM 100-5 *Operations*, (Washington D. C.: Government Printing Office, 1993), 2-19.

³⁶ John A. Warden III, *The Air Campaign: Planning for Combat*, (Washington, D.C.: National Defense University, 1988), 87.

³⁷ *Ibid.*, 87-88.

³⁸ JP 1-02, 18.

³⁹ Warden, 89.

⁴⁰ JP 3-09.3, I-2 – I-3.

⁴¹ Edward V. Weber, *The Future of Fixed-Wing Close Air Support: Does the Army Need It to Fight?* (Fort Leavenworth, KS: U. S. Army Command and General Staff College, School of Advanced Military Studies, 1997), ii.

⁴² *Ibid.*, ii.

⁴³ *Ibid.*, 2-3.

⁴⁴ *Ibid.*, 7.

⁴⁵ *Ibid.*, 9.

⁴⁶ U. S. Department of the Army, FM 71-100 *Division Operations*, (Washington D. C.: Government Printing Office, 1996), 5-9.

⁴⁷ *Ibid.*, 2-15.

⁴⁸ *Joint Vision 2010*, 2.

⁴⁹ *Ibid.*, 4.

⁵⁰ *Ibid.*, 4.

⁵¹ Joint Chiefs of Staff, " *Concept for Future Joint Operations – Expanding Joint Vision 2010*," Joint Electronic Library [CD-ROM], (OC Incorporated, J-7, Joint Staff, 1998), 51.

⁵² U. S. Department of the Army, FM 100-5 *Operations* (Revised Final Draft), (Washington, D. C.: Online Source: <ftp://160.149.109.31/cdd/pdf/f465/f465rfd.pdf>, 19 June 1998), 1-13. Primary functions of the Army include: "to organize, train, and equip forces for the conduct of prompt and sustained combat operations on land – specifically,

forces to defeat enemy land forces and to seize, occupy, and defend land areas; to organize, train, and equip forces for appropriate air and missile defense and space control operations, including provision of forces as required for the strategic defense of the United States, in accordance with joint doctrines; to organize, equip, and provide Army forces, in coordination with other Military Services, for joint amphibious, airborne, and space operations and to provide for the training of such forces, in accordance with joint doctrines.

⁵³ Ibid., 1-16. "The primary function of the Air Force include: to organize, train, equip, and provide forces for the conduct of prompt and sustained combat operations in the air – specifically, forces to defend the United states against air attack in accordance with doctrines established by; the JCS, gain and maintain general air supremacy, defeat enemy air forces, conduct space operations, control vital air areas, and establish local air superiority except as otherwise assigned herein; to organize, train, equip, and provide forces for appropriate air and missile defense and space control operations, including provision of forces as required for the strategic defense of the United States, in accordance with joint doctrines; to organize, train, equip, and provide forces for strategic air and missile warfare; to organize, equip, and provide forces for joint amphibious, airborne and space operations, in coordination with other military services, and to provide for their training, in accordance with joint doctrines; to organize, train, equip, and provide forces for close air support and air logistic support to the Army and other forces, as directed including airlift, air support, resupply of airborne operations, aerial photography, tactical air reconnaissance, and air interdiction of enemy land forces and communications."

⁵⁴ *Joint Vision 2010*, 6-7.

⁵⁵ *Army Vision 2010*, 18.

⁵⁶ Ibid., 10.

⁵⁷ FM 100-5 *Operations* (Revised Final Draft), 6-16.

⁵⁸ Ibid., 6-34.

⁵⁹ Ibid., 7-24.

⁶⁰ Ibid., 7-21.

⁶¹ Ibid., 7-21.

⁶² U. S. Department of the Army, ARTEP 7-30-MTP, *Mission Training Plan for the Infantry Brigade (Command Group/Staff)*, (Washington D. C.: Government Printing Office, 1989), iii.

⁶³ Ibid., 1-1.

⁶⁴ Ibid., iii.

⁶⁵ Ibid., 2-4.

⁶⁶ U. S. Department of the Army, *ARTEP 7-20-MTP Mission Training Plan for the Infantry Battalion*, (Washington D. C.: Government Printing Office, 1988), 5-41.

⁶⁷ JP 3-09.3, II-6.

⁶⁸ Ibid., II-6.

⁶⁹ Ibid., II-8.

⁷⁰ Ibid., II-8.

⁷¹ United States Air Force Instruction (AFI) 13-102 *Air Support Operations Center (ASOC) and Tactical Air Control Party (TACP) Training and Evaluation Procedures*, (On Line Source: <http://www.afpubs.hq.af.mil>, 1 September 1998), 12-13.

⁷² Ibid., 14-16.

⁷³ Ibid., 18.

⁷⁴ Ibid., 10-16.

⁷⁵ Ibid., 18-20.

⁷⁶ Ibid., 18.

⁷⁷ Center for Army Lessons Learned (CALL), *Newsletter NO. 98-13: "Close Air Support,"* (Fort Leavenworth, KS, July 1998), iv.

⁷⁸ Ibid., 1-4.

⁷⁹ Ibid., 1.

⁸⁰ Ibid., 1.

⁸¹ Ibid., 1.

⁸² Ibid., 1.

⁸³ Ibid., 1.

⁸⁴ Ibid., 2.

⁸⁵ Ibid., 2.

⁸⁶ Ibid., 2.

⁸⁷ Ibid., 3.

⁸⁸ Ibid., 3.

⁸⁹ Ibid., 3.

⁹⁰ Ibid., 3.

⁹¹ JP 3-09.3, II-5. The Airborne Battlefield Command and Control Center “provides threat, intelligence, and target updates to CAS aircrews and radio relay to ground and air control elements. ABCCC manages the flow of aircraft into and out of the battle area. ABCCC acts as a backup to the Air Support Operations Center (ASOC) and Air Operations Center (AOC) and can temporarily assume their functions.”

⁹² Ibid., II-8.

⁹³ Peter Lasch and Steve Lucas, *“What the New ALO Needs to Know: White Paper on TACP Lessons Learned,”* United States Air Force Counterland Close Battle Library, Air-Ground Operations School (AGOS), (Online Source: <http://www.nellis.af.mil/agos>, 16 May 1997), 1.

⁹⁴ Ibid., 1, 7.

⁹⁵ Ibid., 2.

⁹⁶ Ibid., 2.

⁹⁷ Ibid., 2.

⁹⁸ Ibid., 1.

⁹⁹ Ibid., 1.

¹⁰⁰ Ibid., 2.

¹⁰¹ James S. Corum, *The Luftwaffe: Creating the Operational Air War, 1918-1940*, (Lawrence, KS: University Press of Kansas, 1997), 223.

BIBLIOGRAPHY

BOOKS

- Corum, James S. *The Luftwaffe, Creating The Operational Air War 1918-1940*. Lawrence, Kansas: University Press of Kansas, 1997.
- Davis, Richard G. *The Initiatives: A Study in Air Force – Army Cooperation*. Washington, D. C.: Office of Air Force History, U. S. Air Force, 1987.
- Naveh, Shimon, *In Pursuit of Military Excellence*. London: Frank Cass Publishers, 1997.
- Steadman, Ken. *A Comparative Look at Air-Ground Support Doctrine and Practice*. Fort Leavenworth: Combat Studies Institute, U. S. Army Command and General Staff College, 1982.
- Warden, Colonel John A. III, *The Air Campaign: Planning for Combat*. Washington, D.C.: National Defense University, 1988.

ARTICLES

- Boatman, John. "USAF and the DAB (Defense Acquisition Board) Debate the Price of Close Air Support," *Janes Defence Weekly* (6 February, 1993): 14.
- Boatman, John. "USA Redefines CAS (Close Air Support) Doctrine for a New Era of Warfare," *Jane's Defence Weekly* (12 December, 1992): 17.
- Coniglio, Sergio. "Close Air Support Operations and Debate," *Military Technology* (October, 1993): 30-31.
- Coram, Robert. "The Case Against The Air Force," *Washington Monthly* (1987 19 (6-7)): 17-24.
- Den Beste, Edwin J. and Servold, Gary M. "CAS Integration Lessons," Online Source: *Counterland Close Battle Library, Air-Ground Operations School (AGOS)*, <http://www.nellis.af.mil/agos/lib.html>.
- Dijkers, Gary L. "Overcoming Poor Attitude is Key to Effective CAS," *AF Times* (December, 1990): 23.
- Duncan, Robert E. "Responsive Air Support," *Air Force Magazine* (February, 1993): 74-78.

- Elsberg, Robert V. "Air Warrior (Training for Close Air Support): Sharpening the Falcon's Claws," *Citizen Airman* (February, 1993): 16-17.
- Gourley, Scott R. "Extending the Range of Rocket & Missile Systems," *Army* (June 1995): 36-38.
- Harrison, Benjamin L. "A-10: A Gift the Army Can't Afford," *Army* (July, 1991): 36-39.
- Hilliard, Jay. "ATACMS (Army Tactical Missile System) Block II: Killing Armored Targets Deep," *Field Artillery* (January – February 1996): 22-24.
- Hudson, Neff. "AF said to Slight Close Air Support, Could Lose Mission," *Air Force Times* (9 November, 1992): 11.
- Jones, Brian W. "Close Air Support: A Doctrinal Disconnect," *Airpower Journal* (Winter, 1992): 60-71.
- Lasch, Peter and Lucas, Steve. "What the New ALO Needs to Know: White Paper on TACP Lessons Learned," Online Source: *Counterland Close Battle Library, Air-Ground Operations School (AGOS)*, (16 May 1997), <http://www.nellis.af.mil/agos/lib.html>.
- Marek, Mark E. "Urban CAS (Close Air Support): Can We Do It?" *Marine Corps Gazette* (October, 1992): 80-81.
- Myatt, Michael J. "Close Air Support and Fire Support in Desert Storm and Desert Storm," *Marine Corps Gazette* (May 1998): 70-74.
- New, Terry L. "Where to Draw the Line Between Air and Land Battle," *Airpower Journal* (Fall 1996): 34-49.
- Raines, Edgar F. "When There was Common Ground in the Air (Army-Air Force Cooperation)," *Army* (March 1995): 24-31.
- Rigby, Randall L. "ATACMS (Army Tactical Missile System)," *Army* (December 1996): 23.
- Smith, Jeffrey A. "Who Can Control a CAS Mission?" *Marine Corps Gazette* (May 1997): 48-49.
- Smith, Michael. "Service Adds 57 New Slots for ALOS (Air Liaison Officers)," *AF Times* (30 December, 1991): 8.
- Sweetman, Bill. "Close Air Support: Fighters High, Helicopters Low," *International Defense Review* (November, 1992): 1077-1081.

Welch, William G. "Is Fixed-Wing CAS (Close Air Support) Worth it?" *U. S. Naval Institute Proceedings* (September 1994): 51-55.

West, Joe. "(Gen) McPeak Reconfirms AF Commitment to Close Air Support," *Air Force Times* (10 February, 1992): 4.

White, Samuel R., Jr. "A Technique for the Employment of Close Air Support (CAS)," Online Source: *Counterland Close Battle Library, Air Ground Operations School (AGOS)*, <http://www.nellis.af.mil/agos/lib.html>.

GOVERNMENT PUBLICATIONS

Air Force Doctrine Document 1. *Air Force Basic Doctrine*. Joint Electronic Library. (OC Incorporated: J-7, Joint Staff, 15 June 1998), September 1997.

Air Land Sea Application Center. *FM 90-36 Targeting: The Joint Targeting Process and Procedures for Targeting Time-Critical Targets*. Langley AFB VA: Government Printing Office, 25 July 1997.

Armed Forces Staff College Publication 1. *The Joint Staff Officer's Guide 1997*. (National Defense University, 1997) Joint Electronic Library. (OC Incorporated: J-7, Joint Staff, 15 June 1998).

Center for Army Lessons Learned. *REFORGER 88 & CERTAIN CHALLENGE, 2nd Armored Cavalry Regiment Actions and Lessons Learned: SSG AAR 007*. Fort Leavenworth, KS: CALL DB Text Viewer.

Center for Army Lessons Learned. *CALL 94-07 Newsletter*: "North Wind 94: Cold Weather Field Training Exercise (FTX) Bilateral Air Space Management (Major Paul Lacusky)." Fort Leavenworth, KS: CALL DB Text Viewer, (July 1994).

Center for Army Lessons Learned. *CALL 95-10 Newsletter: NTC's Fighting with Fires II* "Development of the Brigade Scheme of Fire Support (CPT Samuel R. White, Jr.)." Fort Leavenworth, KS: CALL DB Text Viewer, (July 1995).

Center for Army Lessons Learned. *CALL 98-13 Newsletter*: "Close Air Support (MAJ Don Barnett, NTC)." Fort Leavenworth, KS: CALL Newsletter, (July 1998).

Center for Army Lessons Learned. *Combat Training Centers (CTC) Bulletin No. 95-1* "Air-Ground Operations School (AGOS) CAS Lessons Learned (Colonel Edwin J. Den Beste and Major Gary M Servold)." Fort Leavenworth, KS: CALL DB Text Viewer, February 1995.

Headquarters, Department of the Army. *United States Army Posture Statement FY99*. Washington D. C.: Office of the Chief of Staff, U. S. Army, Congressional Activities Division, February 1998.

_____. *ARTEP 1-045-MTP Mission Training Plan for the Assault Helicopter Battalion*. Washington D. C.: Government Printing Office, 3 October 1995.

_____. *ARTEP 1-100-MTP Mission Training Plan for the Aviation Brigade and Battalion*. Washington D. C.: Government Printing Office, 1 June 1990.

_____. *ARTEP 7-20-MTP Mission Training Plan for the Infantry Battalion*. Washington D. C.: Government Printing Office, 27 December 1988.

_____. *ARTEP 7-30-MTP Mission Training Plan for the Infantry Brigade*. Washington D. C.: Government Printing Office, 17 February 1989.

_____. *ARTEP 17-385-MTP Mission Training Plan for the Division Cavalry Squadron*. Washington D. C.: Government Printing Office, 30 September 1993.

_____. *ARTEP 17-442-MTP Mission Training Plan for the Armored Cavalry Regiment Command Group*. Washington D. C.: Government Printing Office, 30 September 1993.

_____. *ARTEP 71-3-MTP Mission Training Plan for the Heavy Brigade Command Group and Staff (Final Draft)*. Washington D. C.: Government Printing Office, February 1997.

Headquarters, Department of the Army. *FM 7-98 Operations in a Low-Intensity Conflict*. Washington D. C.: Government Printing Office, 19 October 1992.

_____. *FM 17-95 Cavalry Operations*. Washington D. C.: Government Printing Office, 24 December 1996.

_____. *FM 71-3 The Armored and Mechanized Infantry Brigade*. Washington D. C.: Government Printing Office, 8 January 1996.

_____. *FM 71-100 Division Operations*. Washington D. C.: Government Printing Office, 28 August 1996.

_____. *FM 71-100-2 Infantry Division Operations, "Tactics, Techniques, and Procedures."* Washington D. C.: Government Printing Office, 31 August 1993.

_____. *FM 90-14 Rear Battle*. Washington D. C.: Government Printing Office, 10 June 1985.

- _____. *FM 100-1 The Army*. Washington D. C.: Government Printing Office, 14 June 1994.
- _____. *FM 100-5 Operations*. Washington, D. C.: Government Printing Office, 14 June 1993.
- _____. *FM 100-5 Operations (Revised Final Draft)*. Washington, D. C. Online Source: <ftp://160.149.109.31/cdd/pdf/f465/f465rfd.pdf>, 19 June 1998.
- _____. *FM 100-7 Decisive Force: The Army in Theater Operations*. Washington D. C.: Government Printing Office, 31 May 1995.
- _____. *FM 100-8 The Army in Multinational Operations*. Washington D. C.: Government Printing Office, 24 November 1997.
- _____. *FM 100-23 Peace Operations*. Washington D. C.: Government Printing Office, 30 December 1994.
- _____. *FM 101-5-1 Operational Terms and Graphics*. Washington D. C.: Government Printing Office, 30 September 1997.
- Headquarters, United States Air Force. *AETC Index 2 Numerical Index of Standard and Recurring AETC Publications, AETC Computer Systems Manuals, and 19th Air Force Publications*. Online Source: <http://afpubs.hq.af.mil>, 1 September 1998.
- _____. *Air Force Catalog 36-2223, USAF Formal Schools*. Washington D. C.: Government Printing Office, 1 March 1993.
- _____. *AFI 11-2A/OA-10 Volume 1 Flying Operations A/OA-10 Aircrew Training*. Online Source: <http://afpubs.hq.af.mil>, 1 September 1998.
- _____. *AFI 11-2A/OA-10 Volume 2 Flying Operations A/OA-10 Aircrew Evaluation Criteria*. Online Source: <http://afpubs.hq.af.mil>, 1 September 1998.
- _____. *AFI 11-2A/OA-10 Volume 3 Flying Operations A/OA-10 Operations Procedures*. Online Source: <http://afpubs.hq.af.mil>, 1 September 1998.
- _____. *AFI 13-102 Air Support Operations Center (ASOC) and Tactical Air Control Party (TACP) Training and Evaluation Procedures*. Online Source: <http://afpubs.hq.af.mil>, 1 September 1996.
- Joint Chiefs of Staff, *Joint Pub 1-02, DOD Dictionary of Military and Associated Terms*. Washington D. C.: Government Printing Office, 1998.
- _____. *Joint Pub 3-0, Doctrine for Joint Operations*. Washington D. C.: Government Printing Office, 1 February 1995.

- _____. *Joint Pub 3-09.3, Joint Tactics, Techniques, and Procedures for Close Air Support*. Washington D. C.: Government Printing Office, 1 December 1995.
- _____. "Joint Vision 2010," *Joint Electronic Library*. OC Incorporated, May 1997.
- _____. "Concept for Future Joint Operations – Expanding Joint Vision 2010," *Joint Electronic Library*. OC Incorporated, May 1997.
- _____. "Army Vision 2010," *Joint Electronic Library*. OC Incorporated, May 1997.
- _____. "Global Engagement: A Vision for the 21st Century Air Force," *Joint Electronic Library*. OC Incorporated, May 1997.
- _____. "Operational Maneuver From the Sea: A Concept for the Projection of Naval Power Ashore," *Joint Electronic Library*. OC Incorporated, May 1997.
- United States Air Force, Air Ground Operations School, Nellis AFB. "Air Warrior I," *Counterland Close Battle Library*. Online Source: <http://www.nellis.af.mil/agos/lib.html>, 21 September, 1998.
- United States Air Force, Air Ground Operations School, Nellis AFB. "Air Warrior II," *Counterland Close Battle Library*. Online Source: <http://www.nellis.af.mil/agos/lib.html>, 21 September, 1998.

STUDIES AND REPORTS

- Imerman, Brick R. *Army/Navy CAS Cooperation: Don't Forget Navy CAS*. Fort Leavenworth, KS: U. S. Army Command and General Staff College, School of Advanced Military Studies, December 1997.
- Parks, Wayne A. *Tactical Deep Operations: Planning to Maneuver the AH-64*. Fort Leavenworth, KS: U. S. Army Command and General Staff College, School of Advanced Military Studies, December 1997.
- Weber, Edward V. *The Future of Fixed-Wing Close Air Support: Does the Army Need It to Fight?* Fort Leavenworth, KS: U. S. Army Command and General Staff College, School of Advanced Military Studies, December 1997.